DOCUMENT RESUME

ED 336 075 IR 015 085

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TITLE The Place of Global Reality in Interdisciplinary Settings: Using Modern Technology to Link Classrooms for Globalization.
PUB DATE Mar 91
NOTE 10p.; Paper presented at the Annual Conference of the Association for Supervision and Curriculum Development (San Francisco, CA, March 16-19, 1991).
PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Computer Networks; Cultural Differences; Curriculum Enrichment; Educational Environment; Educational Technology; Elementary Secondary Education; Formative Evaluation; *Global Approach; Interdisciplinary Approach; *Telecommunications
IDENTIFIERS *Global Education

ABSTRACT

The Global Education Model (GEM) Project, an undertaking of the Putnam-Northern Westchester Board of Cooperative Educational Services, is part of a larger effort to link students throughout the United States with their counterparts in other countries. GEM's educational technology is augmented by implementing, testing and analyzing nationally recognized programs to investigate the educational application of international telecommunications in classrooms, its effect on instruction, and the strategies required for successful, expanded school-based use. The model is based on the assumption that a global approach to education, with attention paid to cultural differences and an emphasis on interdisciplinary studies, will better prepare children to live, learn, and work as twenty-first century citizens. Formative evaluation of the GEM Project reinforces the importance of structured planning, educational applications, and coordination. The National Geographic Society's KidsNet and the University of Maryland's ICONS constitute the formal part of the GEM research process; informal programs have also been developed in the New York/Moscow Schools' Telecommunications Project using experience gained from the formal programs. Developing a telecommunications support system for a global education program requires attention to a comprehensive global education curriculum, powerful communications processes, and appropriate technology connections; staff development is a key ingredient of all three components. Global education provides a motivating experience for students and teachers to connect with the larger world of learning and work that is outside the school, and often outside their own community and country. (7 references) (DB)

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ED336075

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by

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and

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Paper presented at the Annual Conference
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March 16-19, 1991

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The Place of Global Reality in Interdisciplinary Settings: Using Modern technology to Link Classrooms for Globalization

by Chris Morton and Charles Mojkowski
for the ASCD Conference, San Francisco,
March 1991

Global Education and the international telecommunications component recommended in this article require strategic thinking and planning guided by a carefully crafted vision, mission and goals. Global education must attend to the whole child in a globally-oriented world with a futures-targeting vision of the ways in which the graduates of our schools will learn and work as twenty-first century citizens (Smuckler and Sommers 1989). We are increasingly aware of the globalization of nearly every issue our children face; from the spiritual relationship of the earth to all living things to the political and social intricacies of balanced world interdependence, from global economic structures to the impact of environmental destruction, from international conflict to worldwide hunger.

Global strategic thinking encourages an internal and external holistic and sytemic analysis and action. Global strategic planning requires that educators study their internal environments and begin to attempt to instill appreciation in their clientele for international and global trends affecting the future lives of our children - not only in classroom-based instruction, but in a focus which includes opening these internal environments to external influences through external information access, and in developing global educational processes which, themselves, embrace the concepts of globalization within the school expanding global thinking into a global climate (Ornstein and Erhlich 1989).

THE GLOBAL CHILD FOCUS

An international team of sixth grade students studies national heroes. They research how heroes are defined and created within a culture. Another international team of eleventh graders develops a comparative analysis of the pollution in New York City's East River and Moscow's Moscow River. This work is a combination of interdisciplinary segments wrapped around a core of research, communication, information science and multidisciplinary skills. At least one further element of the projects is very different from current instructional practice: members of the teams are students from different countries working together in real time on real problems. The challenge of their joint work is apparent: their contrasting cultures and the divergent circumstances of their lives and environments are sufficient to provoke intense discussion and very variable data interpretation, but more than this -the nature of their global collaboration suggests that these children will not only learn multidisciplinary skills in the process of their work, but will also learn to respect each other. The collaborative work enhances their research ability, emphasizing international sharing. It also extends and enriches a real understanding of each other's cultures. The global nature of these projects is evident in their content and process but also in the scope of their multidisciplinary skills.

These global team members and others like them "meet" regularly using a private telecommunications link from New York through San Francisco to the various countries in the program. They have discussions, share drafts of their work, and conduct research using the telecommunications system. Occasionally, they communicate using a slow-scan video conference telephone that enables them to see one another as they talk. The New York and Moscow contingents have never met in person, but they and other teams of students around the world, working on their own projects, talk more frequently and deeply about global issues than do students sharing the same classroom.

The international school teams are participating in the Global Education Model Project (GEM), an undertaking of the Putnam-Northern Westchester Board of Cooperative Educational Services (BOCES). GEM itself is part of a larger effort to link students throughout the United States with their counterparts in several countries throughout the world. Major

funding for the New York/Moscow program is provided by the Copen Family Fund of Westchester County, New York, with additional support from the Putnam BOCES'. The Fund's mission is to promote world peace and understanding by supporting direct and ongoing linkages among students of different countries around significant local, regional and global topics and issues through I*EARN (International Education and Resource Network). The New York/Moscow project is a model three-year project, initiated by the Copen Family Fund through an agreement with the Soviet Academy of Sciences. It is currently being extended for another three years and expanded to a larger number of schools.

THE EXPERIMENTAL BACKGROUND

The Global Education Model's expanding work in educational telecommunications is augmented by implementing, testing and analyzing nationally recognized programs to investigate the educational application of telecommunications in classroom environments, its effect on instruction, and the strategies required for successful, expanded school-based use. Programs tested thus far include The National Geographic Society's KidsNet, AT&T's ClassMates, the University of Maryland's ICONS, WorldLink's World Citizen Curriculum, University of Michigan's ICS Program and, currently, GTE's WorldClassroom. GEM telecommunications also in clude a local electronic mail system called the PutWest BBS for teacher, student, and administrator use, allowing free access for development, experiment, communications and information access.

Formative evaluation of the project to date reinforces the importance of structured planning, educational applications, and coordination. Programs such as KidsNet (emulated and expanded to include Social Studies and Language projects at middle and secondary school level by GTE's WorldClassroom programs) have shown that the online application of the scientific research process, where students collect data from real situations, share the data with peers in other regions (and countries) in structured formats (e.g., maps and matrices), and are able to discuss interpretations of this data, develops an expanding, highly motivating instructional environment in classrooms that encourages apparently unplanned but educationally and socially important responses by students to their findings. However, behind these "unplanned" responses is a tightly structured and controlled learning/sharing environment. These programs also show the need for very careful strategic planning for the most effective educational impact including a vision, a structured objectives focus, coordination and very precise action steps leading to planned outcomes.

Online simulations such as those developed by the University of Maryland in their ICONS program reinforce the need for structure and defined learning outcomes based on an active exchange among students. In all cases in this program schools found that students became highly motivated because of their ability to share and discuss concepts with their peers and because of the application of simulation designs taken from "real" situations which have a direct impact on the lives of the students. A side-effect of both the scientific research programs and the political science simulations was the direct involvement of the community because of the expanding and pervasive enthusiasm of the students and the need to obtain information in the community not readily available in the school.

The programs that are a part of the GEM research process (e.g., KidsNet, ICONS) constitute the formal part of a two-part program development process. The second part includes informal programs, which have been developed in the New York/Moscow Schools' Telecommunications Project, using experience gained from the formal programs. In designing the criteria for informal programs, project developers insisted on three requirements: (a) that the programs be student generated, (b) that teachers plan a support role, (c) that the projects make a difference, that is, address significant global or social issues and the results are shared with local communities.

SAMPLE PROJECTS

The New York/Moscow Schools Telecommunications Project and other country links thus far include a diverse set of student projects:

o the analysis of economic relationships between the USSR and the US which will provide information and advice for business entrepreneurs working on joint ventures;
o DNA research;
o analyses of world deforestation;
o the development of humanitarian laws by students in Belgium, the U.S. and the USSR, collaboratively, which were presented this year at the World Court in the Hague through the help of the New York bar Association.
o the development of cooperative newspapers and anthologies;
o the application of literary criticism to selected works by both Soviet and American authors;
o the analysis of global climate patterns;
o several science-and-math-based programs involving polling, iteration, and problem-solving designs;
o historical comparisons looking at settlement geography; and
o conflict analysis.

The diversity of these programs gives some indication of the interests of the students involved and of the cooperative involvement of their teachers. The variety of programs also emphasizes the deliberate experimental and exploratory application of telecommunications in the many applications between different classrooms.

STRUCTURED PROGRAM NEEDS

GEM also targets the changing of instructional methodology (moving away from didactic approaches) based on several different approaches to student problem-solving, and with particular changes in the role of the teacher (from information provider to information guide or facilitator.) There is also a strong focus on improved inter-personal and international communications, research and information utilization skills, and cultural/social sensitivity skills. The best learning environment for the development of these skills is an interdisciplinary, global issues environment. All this is part of a sustained and coordinated program supporting collaborative/cooperative structures far beyond the usual "pen pals" process in student/teacher-based telecommunications in participating countries. These countries now include the USSR, the USA, China, Indonesia, Argentina, the Philippines, Israel, Spain and the Netherlands.

Developing a telecommunications support system for a global education program requires attention to several tasks. Our work with GEM and our involvement with other exemplary telecommunications-supported global education projects points to the importance of three key components: a comprehensive global education curriculum, powerful communications processes, and appropriate technology connections. Staff development is a key ingredient of all three components.

THE STRATEGIC PLANNING COMPONENTS

Preeminent attention must be given to the global education curriculum instructional content and process that is the focus of the international projects. The global content (e.g, cultural variences, geography, social relationships, habits, conflicts, environmental issues, politics, organizational structures, global problems,) the student learning outcomes (e.g., improved communications skills, expanded problem-solving skills, developed global understanding and inter-cultural understanding, increased sharing ability, better developed critical thinking skills,) and the teaching and learning processes (in-and-out of classroom instruction and experiences) must be integrated into the fabric of the entire school curriculum at a particular level, or throughout the K-12 milieu (although this is a very complex task).

Isolated courses in global education, particularly when provided as electives, weaken the central purpose of the GEM global education intent in these projects, which is to infuse all of the school curriculum with a global perspective; to "globalize" education. Structured inter-disciplinary approaches including team teaching, thematic cross-discipline project design and support, and the design of common-level curricular goals are an integral part of this globalization effort (McConaghy 1990).

GEM uses state-of-the-art telecommunications in support of the globalization of the education curriculum. The globalization of the

curriculum is both the development of a content and a process; a set of issues and topics as well a teaching and learning framework, emphasizing real-experience learning. Our curriculum work is guided by a vision of the successful twenty-first century learner, citizen and worker. We select our learning outcomes and our teaching and learning processes to best match the way that learning and work will take place outside of the schools in the real-world learning and work environments of the future global citizen (Schoumacher and Cadden 1989).

An example of the curricular system is found in the intended fourth-grade elementary project which involves seven schools in various parts of the US and a school each in Leningrad and Moscow. The project is part of the curriculum for the whole year and focuses on mythology as a central concept around which the various disciplinary skills are woven. Students begin with "local folk tales," collecting them, writing them for their peers, researching their origins, and interpreting them together; reading, writing, cultural analyses, scientific research, social research, math, and political analysis are all a part of the program. The projects become more involved and difficult as the year progresses moving into the wider mythology, historical contextualization, changes over time related to changing social mores and comparisons between myths in parts of the US and those in the USSR focus on deepening cultural differences and the perceived reasons for them. At the end of the year students publish a booklet of selected stories in both languages, and present them to meetings of their communities with oral embellishments and explanation of the projects.

Perhaps the most vital component of the GEM program is how teachers and students communicate and work with one another within the globalized curriculum (remembering that this involves communication on site as well as communication between sites). The most important factor in this section is the way in which the teaching and learning process is structured to foster communication and designed to give access to multiple sources of data and information, human and text-based. The telecommunications technology is central to this component but if the structures and processes for communication are not well designed, both within and between school sites, no amount of technology will sustain the effort. These structures include, at a minimum, cooperative groups, flexible scheduling, and teachers as facilitators and resource organizers.

Students from a school on the West Bank in Israel and a school on the Hudson River in New York discussed settlement geography and the historical perspectives of their particular settings. The Israeli child described how she imagined Roman soldiers marching over the land she could see from her window at school, while the American child imagined Henry Hudson sailing up the river outside his window. The students began their project in this way because their teachers understood the sensitivity of current political and social crises and had "blocked" (a term used to denote the designation of pieces of a project dealt with within specified time blocks which include telecommunications scheduling for data transmission and interpretive work) the project to include an early "lead-in," building towards the tougher questions. Each group worked towards these questions with care and understanding. The project also allowed individual students to discuss Middle East developments and their interpretation in countries other than those in the project (e.g., the Labanese war and the collapse of the Christian Militia in Beirut.)

The third essential element, making connections, requires that the schools develop a technology support system to establish and maintain the telecommunications linkages between them. Telecommunications allows both students and teachers to work beyond the classroom walls. It provides the opportunity for easy and continuous communication, with teachers expanding the process of instruction through collaborative planning, data excha nge, shared information interpretation and knowledge development. The telecommunications process functions at a local level between classrooms and schools, at a national level between schools and districts, and at an international level between peoples and cultures. The potential of the telecommunications media and the educational processes themselves still are being researched, but it appears that their major attribute is their support of student centered approaches and developmental education techniques, focused on global issues with global partners including global

information access. The staff development component in this global education program requires comprehensive and continuing attention. We have addressed this need in GEM with a three-stage model: extensive awareness and orientation are provided before moving on to developing new knowledge and skills and completing the process with in-class implementation support for the new teaching behaviors.

The substantial changes inherent in the program require that teachers have an opportunity to understand the changes inherent in the program before committing to training and implementation in their classrooms. Administrators and coordinators must be included in this process because of the curriculum changes needed, and the extensive technical and resource support needed for the projects. The training includes not only telecommunications as a process, but the planning necessary to use it effectively, the problem-solving approaches that are most effective in project application, how students participate in selecting projects, cultural sensitivity, and ways to integrate the program into the curriculum using a multi-disciplinary skills focus.

There are many nuts-and-bolts tasks that need to be addressed:

o identifying schools in other countries, establishing contacts, and forging long-term agreements;
o establishing the technology support systems for the communications, including equipment, software, and telecommunications facilities;
o learning about the countries) with whom relationships can be forged;
o developing a common curriculum of learning outcomes and teaching and learning processes;
o organizing student pairings and team assignments;
o facilitating and monitoring learning ; and
o maintaining the system of communications and connections.

OTHER IMPORTANT STRATEGIES

Strategic approaches also encourage the identification of priorities through an open systems planning process. Limited technology resources need to be applied to what the school community feels are the most appropriate and important learning outcomes and instructional processes. Districts and schools participating in the GEM project use the technology to connect students and teachers to the larger world of learning and work that is outside the school and often outside their own community and country.

An emphasis on global education can provide an intrinsically motivating experience for students to engage with students in other countries around a substantive set of curriculum problems, issues, and tasks. At least once a year the planning team can conduct a formal review of the strategic direction. They can examine any changes in the external and internal environment since the development of the original plan, question whether some of the assumptions still apply and whether the mission statement and strategic goals continue to express the vision of the schools with respect to the use of technology to support teaching and learning.

Telecommunications networks alone do little to enhance learning. International educational telecommunications programs that do not grow beyond electronic pen-pal processes result in early disillusionment, halfhearted participation and eventual collapse; students' interest in their foreign peers' habits quickly wane. Educational telecommunications without structure and without instructional relevance in curricular settings lose teacher and administrator support and soon dissipate and disappear.

The classroom doors are no longer closed; teachers and administrators must learn to plan collaboratively. Program development efforts need to involve teachers and students in program conception, design and implementation. The magnitude of the changes required in learning outcomes, and teaching and learning processes, argue for such involvement. Structured, planned, and carefully designed programs with local participation in the development process are crucial to success that is measured by learning gains and by expanded global cooperation.

The knowledge base regarding global education in general, and technology-supported global education in particular is developing rapidly.

There are now sufficient approaches and models available to inform the work and planners must design programs intelligently. Documentation of these approaches should be reviewed to identify variables requiring special attention in project design and implementation. Formative and summative evaluation is essential to the projects.

Global education projects incorporating international telecommunications are complex undertakings which require deliberate implementation. The magnitude of the change requires a staged implementation. Using new communications technologies to link students to sources of information outside of their classrooms can be quite subversive to a traditional curriculum and teaching and learning process. Project topics don't stay neatly within the traditional subject areas. Teacher-as-presenter and in formation provider roles become anachronisms. Time and other variables are employed differently. The best programs actually require that teachers become facilitators and resource specialists, helping students to use new tools and processes for learning. Such changes require a long-term commitment to incremental implementation within the grand design. By implementing incrementally and deliberately, all involved are able to learn how the program is accomplishing intended outcomes and make mid-course corrections and adjustments.

GROWING NEEDS AND PERSPECTIVES

Based on our work to date and on the several other programs developing throughout the world, we see several opportunities for improving technology supported global education programs. Perhaps the most pressing need is to expand the number and variety range of international linking opportunities. We have established contacts with several countries throughout the world, but our contacts within each country are quite limited in number. We expect the number of new sites to expand as we develop further. To make information about these expanding contacts more readily available, we are developing a database (ChildLink 1991) which will provide information regarding countries, types of schools, types of organizations, as well as provide information on the kinds of telecommunications systems, specific names of contact people and descriptions of the various projects that we are running throughout the country. Without such information it is difficult for schools to decide what kinds of contacts they wish to make.

There are a wide range of applications in nearly every subject area, but we have not yet fully tapped the power of interdisciplinary and integrated learning around meaningful tasks. We need to expand the number and range of learning projects that students can work on and link those projects to the mainstream curriculum in each school.

We are working on the use of low-level satellite-based communications and the involvement of students in the design and construction of these systems. We are also studying the possibility of amateur radio licensing for students working in these satellite programs and actually building school based satellite ground stations for the development of centralized receiving and transmission facilities for clusters of students around the world. These latter communication systems are very appropriate where traditional forms of communication are not well established. This is particularly the case in developing countries.

Students must be given the opportunity to make a difference in their world (whether that world be in the local school, the community, the country, or on the globe) and must be encouraged to first expand their own vision in their suggested design of on-line programs in collaboration with their peers in other countries. Secondly, when designing programs, students and teachers must focus on the outcomes of such programs and ask themselves whether these outcomes do include making a difference and how this difference is achieved.

"FUTURELEARNING"

Arthur C. Clark's vision of a world linked by telecommuni-cations is nearly a reality. Our vision accords with, and extends, his in that we believe that educational telecommunications provides an essential means for increasing global understanding and cooperation. We are particularly interested in how telecommunica-tions technologies (e.g., electronic mail,

conferencing systems, video telephones) catalyze and support a transformation of teaching and learning processes between groups of students in different countries. And if Alvin Toffler is to be believed in his new book Power Shift (1990) educators better work at getting telecommuni-cations access for their systems or they may not be able to do so in the future. We should be asking now what changes in curriculum and instruction are necessary to take best advantage of the telecommuni-cations capabilities, and what special characteristics of the telecommunications facilitate or inhibit the transformation we wish?

Increased attention to global education is prompted by an awareness of the interdependencies we share with all countries and of the very limited perspectives which many students have of global issues. Beyond the issues, we know that learning and work is becoming increasingly internationalized. The communication system which we take for granted is now world-wide, each year extending its linkages further into developing countries, affording millions of people access to the same knowledge if we learn to support its growth and demand educational access.

Although the use of telecommunications in schools is relatively new and the effort to create appropriate applications is substantial, global learning networks are expanding rapidly. This growth is spurred by easy-to-use software, inexpensive hardware and a growing number of communication links. Each program is based on the GEM model, but is customized to fit the particular circumstances and requirements of each country (time zones, cultural emphases, schooling schedules, interests - these all change.) The technological networks are not yet fully mature, and so we must also spend time negotiating for telecommunications access and often designing that access in different world regions.

Finally, we believe that a global educational vision without global contact between global students and teachers is an incomplete educational vision. The future of our planet depends on the collaborative wisdom of its inhabitants and their ability to communicate and learn together. Telecommunications provides the means for bridging the communications gap and creating virtual world-wide classrooms for twenty-first century learning. It also allows us to be true to our global model for what limited classroom-based model can really be called "global"? (For succinct overview of global education approaches see Vocke 1988.)

When Aran Sevrum from Israel found that he could share his perceptions about global warming with Sharon Singleton in the United States, he was delighted. But, more importantly, "I can test my research and interpretations with students working on the other side of the world, and we can really develop meaningful results that will even look good to adult researchers." And when a group of fifth graders wrote to their U.S. counterparts asking if they all carried guns, the American children could reassure them and explain that violence is not an inherent part of their culture. Students in Argentina were curious to know if their U.S. peers knew that they lived directly under the southern ozone "hole" and what this meant to them. What could they do as a group to remedy this situation?

As limited as these incidents are, they emphasize the value of direct contact between students, and the complexity of the issues they face and must deal with in their future. Global education must embrace the challenge of providing choices for our citizens of the future by starting now to help them learn to collaborate globally and to understand better how to make the right choices for their generation and the generations that follow them.

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